

ABSTRACT

A screw rotor device has a housing with an inlet port and an outlet port, a male rotor, and a female rotor. The male rotor has a pair of helical threads with a phase-offset aspect, and the female rotor  
5 has a corresponding pair of helical grooves. The female rotor counter-rotates with respect to the male rotor and each of the helical grooves respectively intermeshes in phase with each of the helical threads. The phase-offset aspect of the helical threads is formed by a pair of teeth bounding a toothless sector. The arc angle of the toothless sector is at least twice the arc angle that subtends either one of the teeth. The helical grooves have a radially narrowing axial width at the periphery  
10 of the female rotor. The male and female rotors may include a buttress thread profile and may be limited in length to a single pitch.